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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/853,614	05/14/2001	Shinichi Miyazaki	0229-0643P	6710

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EXAMINER

FISCHER, JUSTIN R

ART UNIT	PAPER NUMBER
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1733

DATE MAILED: 11/01/2002

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/853,614

Applicant(s)

MIYAZAKI ET AL.

Examiner

Justin R Fischer

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 December 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2. 6) ☐ Other: _____

DETAILED ACTION

Priority

1. Acknowledgment is made of applicant's claim for foreign priority based on applications filed in Japan on May 30, 2000. It is noted, however, that applicant has not filed a certified copy of the Japanese applications as required by 35 U.S.C. 119(b).

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-5 are rejected under 35 U.S.C. 102(b) as being anticipated by Takahashi (JP 11-334313). Takahashi discloses a pneumatic tire construction in which the carcass or the belt is formed of aliphatic polyketone fiber cords. In this instance, the aliphatic polyketone fiber cord has a strength of greater than or equal to 10 grams per denier and a standard elongation of less than or equal to 3.5 % (Paragraphs 22 and 23).

With respect to claims 2 and 3, Takahashi describes the use of an aliphatic polyketone fiber cord in a plurality of tire components, including the carcass, belt, and belt covering layer (zero degree layer) (Paragraph 46). In Table 2, Takahashi details the embodiments in which the aliphatic polyketone fiber cord is used in the belt structure. In these instances, the tensile strength is always greater than 10.2 grams per denier, the standard elongation is always less than 2.2 %, and the twist number or coefficient is 1650. Furthermore, Takahashi suggest a range between 1,000 and 2,000

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for the twist number or coefficient when used as a belt reinforcing element (Paragraph 47). While the reference fails to expressly describe the dry heat shrinkage as being less than or equal to 6.0 %, this property would intrinsically be present in the aliphatic polyketone fiber cord of Takahashi as it represents a material property and not a processing property, there being no evidence in the original disclosure that the dry heat shrinkage of the claimed invention results from a unique series of processing steps. It is additionally noted that the aliphatic polyketone fiber cord of Takahashi, as compared to that of the claimed invention, is used in the same tire component and has the same tensile strength, standard elongation, and twist number and as such, it is the examiner's position that the aliphatic polyketone fiber cords of Takahashi have a dry heat shrinkage that falls within the range of the claimed invention.

Regarding claim 4, Takahashi further states that the aliphatic polyketone fiber cord has a twist number or coefficient between 1200 and 2200 when used as a carcass reinforcing element, which encompasses the entire range of the claimed invention. While the reference fails to expressly describe the dry heat shrinkage as being less than or equal to 3.0 %, this property would intrinsically be present in the aliphatic polyketone fiber cord of Takahashi as it represents a material property and not a processing property, there being no evidence in the original disclosure that the dry heat shrinkage of the claimed invention results from a unique series of processing steps. It is additionally noted that the aliphatic polyketone fiber cord of Takahashi, as compared to that of the claimed invention, is used in the same tire component and has the same tensile strength, standard elongation, and twist number and as such, it is the examiner's

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position that the aliphatic polyketone fiber cords of Takahashi have a dry heat shrinkage that falls within the range of the claimed invention. Also, Takahashi is directed to a **radial** pneumatic tire, in which case the reinforcing elements would be inclined at an angle within the range of the claimed invention.

Regarding claim 5, Takahashi describes the aliphatic polyketone carcass cords as having a denier between 2,000 and 4,000, and a twist number or coefficient between 1,200 and 2,200, wherein any value for either variable falls within the range of the claimed invention (Paragraph 34).

4. Claims 1 and 4 are rejected under 35 U.S.C. 102(b) as being anticipated by Miura (JP 09-324377). Miura discloses the of an aliphatic polyketone fiber cord as a tire reinforcing element since it contains a high elastic modulus, is excellent in fatigue resistance, and contributes to low heat buildup properties. In particular, the reference suggests a preferred use of said aliphatic polyketone fiber cord in the carcass structure of a heavy-duty radial tire.

Regarding claim 4, Miura describes the aliphatic polyketone fiber cord as having a tensile strength greater than or equal to 10.0 grams per denier. While the reference fails to expressly describe the standard elongation and the dry heat shrinkage as being less than or equal to 3.0 %, these properties would intrinsically be present in the aliphatic polyketone fiber cord of Miura as it represents a material property and not a processing property, there being no evidence in the original disclosure that the dry heat shrinkage or the standard elongation of the claimed invention result from a unique series of processing steps. It is additionally noted that the aliphatic polyketone fiber

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cord of Miura, as compared to that of the claimed invention, is used in the same tire component and has the same tensile strength, and as such, it is the examiner's position that the standard elongation and the dry heat shrinkage fall within the range of the claimed invention.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi. Takahashi teaches a radial, pneumatic tire construction in which aliphatic polyketone fiber cords are used as reinforcing elements in a plurality of tire components, including the carcass, belt, and belt cover layer. In this instance, the reference suggests the following properties:

	Carcass	Belt / Belt covering layer
Tensile Strength (g/d)	≥ 10	≥ 10
Standard Elongation (%)	$\leq 3.5 \%$	$\leq 3.5 \%$
Twist Number	1,200 – 2,200	1,000 – 2,000
Denier	2,000 – 4,000	3,000 – 5,000
Cord Angle	Radial (appr. 90°)	10-35° / 0°

While the reference fails to expressly suggest a range for the dry heat shrinkage (in either instance), this property would intrinsically be present in the aliphatic polyketone fiber cord of Takahashi as it represents a material property and not a processing property, there being no evidence in the original disclosure that the dry heat shrinkage of the claimed invention results from a unique series of processing steps. It is additionally noted that the aliphatic polyketone fiber cord of Takahashi, as compared to that of the claimed invention, is used in the same tire component and has the same tensile strength, standard elongation, twist number or coefficient, and denier, and as such, it is the examiner's position that the aliphatic polyketone fiber cords of Takahashi have a dry heat shrinkage that falls within the range of the claimed invention. Thus, the reference is only devoid of a specific teaching that suggests the simultaneous use of the aliphatic polyketone fiber cord in both the carcass and the belt. In any event, one of ordinary skill in the art at the time of the invention would have found it obvious to form a carcass and a belt out of the aliphatic polyketone fiber cord since the benefits of decreased tire weight, improved high speed endurance, reduced cost, and improved driving stability are desired. It should be noted that when describing the use of the fiber cord in each of the tire components, the reference uses the language "in at least the (carcass, belt, belt cover layer)". Tables I and II evidence the benefits of using the fiber cord in the carcass and belt layer, individually, and as such, a tire design having a carcass and belt formed of the fiber cord would have been readily appreciated and one of ordinary skill in the art at the time of the invention would have been motivated to

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obtain a tire design that exhibited a combination of the benefits attributed to each of the respective tire components when formed of an aliphatic polyketone fiber cord.

7. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miura in view of Takahashi. Miura discloses the use of aliphatic polyketone fiber cords in the carcass structure of a radial tire, wherein said cords have a tensile strength that is equal to or greater than 10 grams per denier and a twist number or coefficient between 1,300 and 2,200. Regarding the standard elongation and dry heat shrinkage, these properties represent material properties, not processing properties, and as such, the fiber cords of Miura would have a standard elongation and a dry heat shrinkage in accordance to the limitations of the claimed invention, it being further noted that the fiber cord is used in the same tire component and has the same tensile strength and twist number or coefficient as compared to the tire of the claimed invention. While the reference fails to provide a range for the denier (single embodiment in which denier is 1,500), one of ordinary skill in the art at the time of the invention would have readily appreciated the use of aliphatic polyketone fiber cords having a denier between 2,000 and 4,500 as it defines a broad and well known range for carcass reinforcing elements and aliphatic polyketone fiber cords in particular, as evidenced by Takahashi. Takahashi describes the use of aliphatic polyketone fiber cords in a carcass reinforcement structure, wherein said cords have a denier that ranges between 2,000 and 4,000 (all values fall within range of claimed invention). Thus, it is evident that the single embodiment of Miura is exemplary and one of ordinary skill in the art at the time of the invention would have found it obvious to form the aliphatic polyketone fiber cords of Miura with a denier

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between 2,000 and 4,500 as the claimed range defines well known carcass cord properties. It should also be noted that the denier is dependent on the twist number or coefficient and the number of twists per centimeter and as such, the reference is directed to a plurality of embodiments in which the denier would fall within the broad and well known range of the claimed invention.

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Justin R Fischer** whose telephone number is **(703) 605-4397**. The examiner can normally be reached on M-F (7:30-4:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Ball can be reached on (703) 308-2058. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.



Justin Fischer

October 31, 2002

